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(58) Field of search

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(54) Dental articulating device

(57) A device for inspecting the occlusion in dental treatment consists of a base sheet 12 of paper or transparent or semitransparent film, one of the surfaces of which is coated with a dark waxy pigment 14 and the other with a pressure sensitive colour developing agent 16. Alternatively, the coating 16 may be provided on a second base sheet 24 which is fixed to a first base sheet 22 being the coating 14 by means of a staple or a paste layer 26. The pressure sensitive colour developing agent may comprise solid acid (active clay or bisphenol-A) together with micro-capsules containing colourless pigment solution.

FIG.1

FIG.2

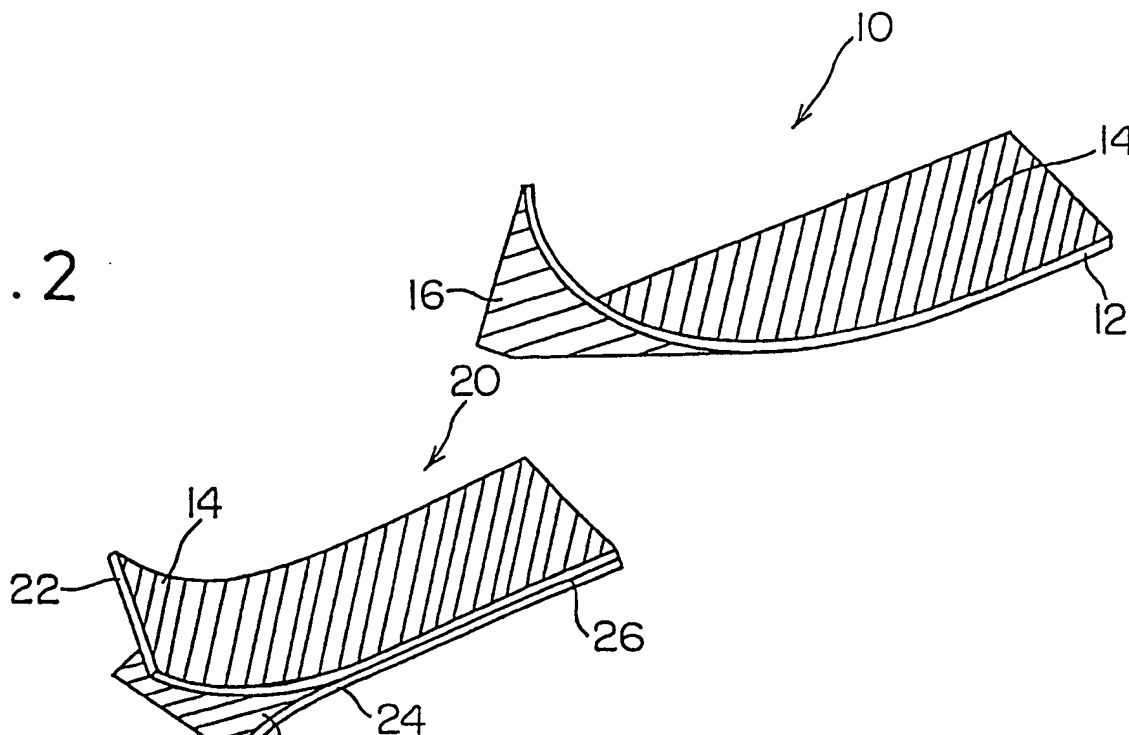


FIG. 1

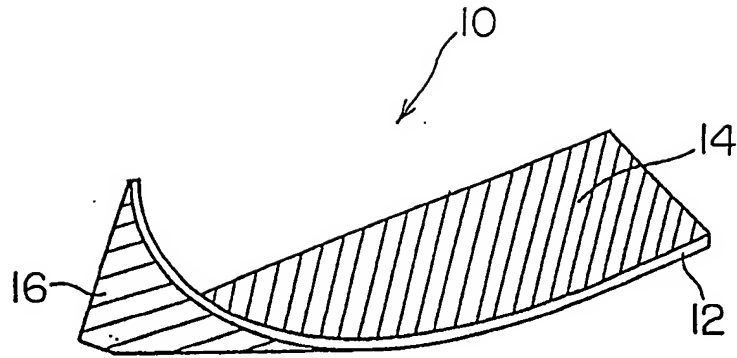


FIG. 2

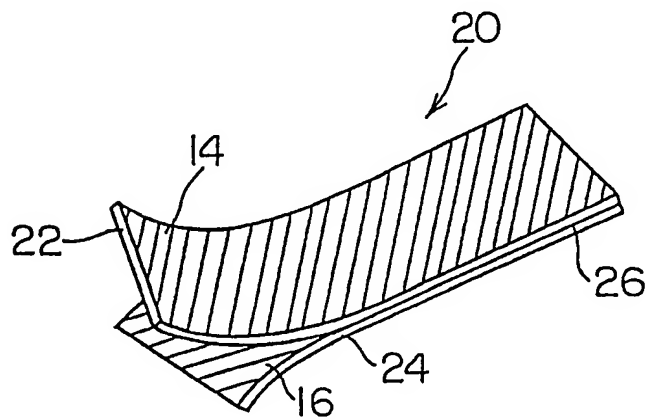


FIG. 3

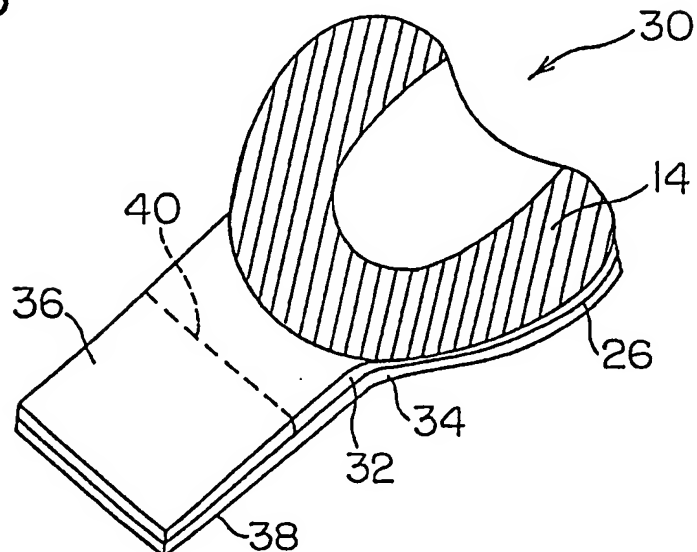


FIG. 4

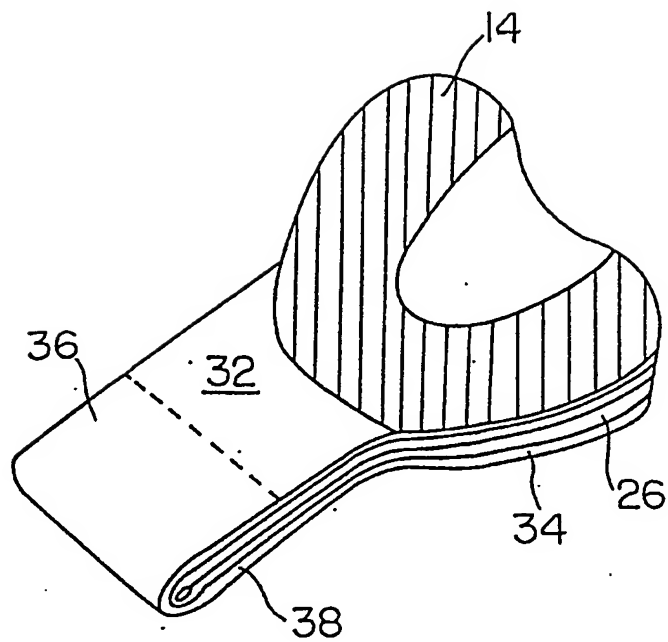


FIG. 5

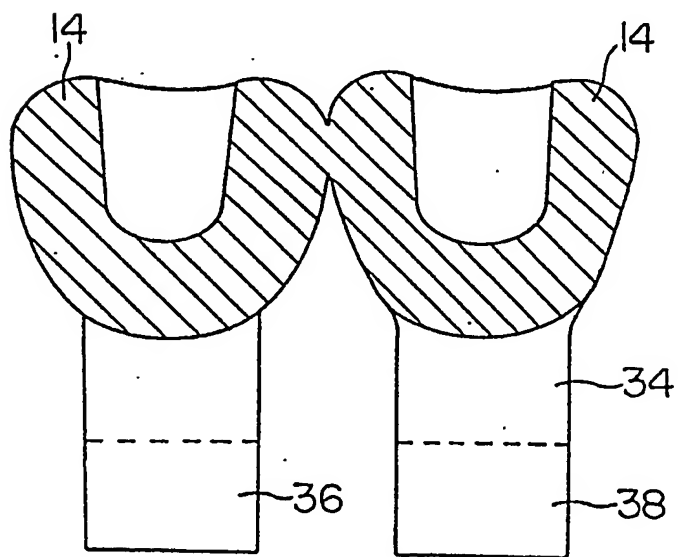


FIG. 6

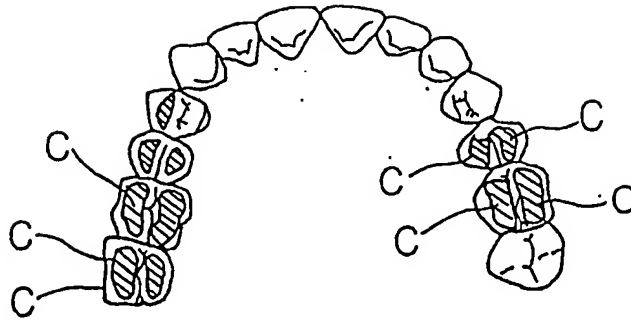


FIG. 7

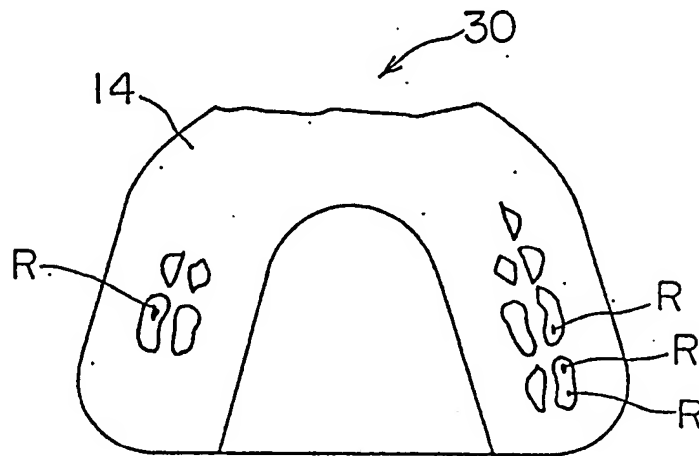
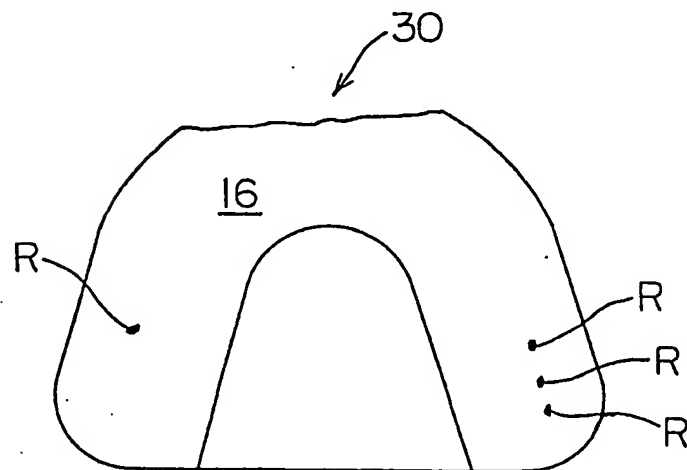


FIG. 8



-1-

Articulating Device

[Field of the Invention]

This invention relates to an articulating device for inspecting dental occlusal relationship between the upper and lower teeth.

[Background of the Invention]

In treatment of the teeth, preparation of denture or denture service, the contact between the upper and lower teeth must be adjusted for normal occlusion.

In general, as an articulating device for inspecting the contact between the upper and lower teeth, a carbon paper is used.

When the articulating carbon paper is bit by the upper and lower teeth, dark waxy pigment covered on each of the surfaces of the paper is transferred onto the surface of each of the teeth so that the impression may be made on the occlusal positions.

It is, however, impossible to detect or inspect malocclusion and portions to which an abnormal occlusal pressure is applied for the reason that the teeth do not fit together properly..

In view of the above, a principal object of the present invention is to provide an articulating device which gives greatly improved performance characteristics when used as preparations for dental treatment and purpose.

It is another object of the present invention to provide an articulating device which provides reliable information with

respect to malocclusion.

Other and further objects of the present invention will become obvious upon an understanding of the illustrative embodiments about to be described or will be indicated in the appended claims, reference being had to the accompanying drawings.

[Brief Description of the Drawings]

Figure 1 is a schematic perspective view of a first embodiment of an articulating device according to the present invention, in which a corner of a sheet of device is turn up;

Figure 2 is a schematic perspective view of a second embodiment of the articulating device according to the present invention, in which a portion of each of the sheets forming the device is separated to show the construction;

Figure 3 is a schematic perspective view of a third embodiment of the articulating device according to the present invention;

Figure 4 is a schematic perspective view of a modified embodiment of the articulating device shown in Figure 3;

Figure 5 is a developed view showing a construction of one form of the articulating device shown in Figure 3;

Figure 6 is a diagram of assistance in explaining impressions made on the surfaces of the teeth by using the articulating device according to the present invention;

Figure 7 is a schematic diagram illustrating an example of the surface of the sheet covered with a dark waxy pigment in the device according to the present invention when the device is bit by the upper and lower teeth; and

Figure 8 is a schematic diagram illustrating an example of the surface of a base sheet coated with pressure sensitive color developing agent in the articulating device according to the present invention when the device is bit by the upper and lower teeth.

[Description of the Preferred Embodiments]

Referring now to the drawings, in Figure 1 there is shown a first embodiment of an articulating device generally designated reference numeral 10. The articulating device 10 can be made by a single base sheet 12 of paper, semitransparent or transparent film.

One side of the base sheet 12 is coated with dark waxy pigment 14 and other side is coated with a pressure sensitive color developing agent 16.

The pressure sensitive color developing agent 16 is generally well known in the art and consists of colorless pigment dissolved in non-volatile solvent and solid acid such as acid (active) clay or bisphenol-A. The colorless pigment dissolved in solvent is enclosed in a large number of the microcapsules. the microcapsules containing the pigment and solid acid may be applied to on the surface of the base sheet 12 separately or in combination.

The articulating device 10 according to the present invention can be bit by the upper and lower teeth of a patient so that the dark waxy pigment 14 on the surface of the base sheet 12 may be transferred and impressed onto the surface of each of the teeth.

And also the colorless pigment in the pressure sensitive color developing agent 16 can be changed in color when the capsule is crushed and the pigment enclosed in the microcapsule contacts with the solid acid at the position to which the high pressure is applied. Consequently, the position of the malocclusion of a patient can easily be inspected by a doctor in inspecting the surface of each of the teeth marked with the waxy pigment and the positions changed in color on the surface of the base sheet 12 coated with the pressure sensitive color developing agent 16.

When the base sheet 12 of the articulating device 10 is made of a semitransparent or transparent film, and bit by the upper and lower teeth, the transfer of the dark waxy pigment 14 from the surface of the base sheet 12 to the tooth is clearly shown in the base sheet 12. On the other hand, portions on the surface of the film covered with the pressure sensitive color developing agent 16 are changed in color by the pressure applied thereto in biting. Consequently, the position of the malocclusion can be easily detected by the doctor.

In a second embodiment of the present invention, as shown in Figure 2, an articulating device 20 is formed from a first base sheet 22 and a second base sheet 24. The first base sheet 22 can be made of paper or semitransparent or transparent film and one side of the base sheet 22 is coated with the dark waxy pigment 14 and other surface may be coated with the above-mentioned colorless pigment contained in the large number of the microcapsules forming a portion of the pressure sensitive de-

veloping agent 16. The surface of the second base sheet 24 contacting with the first base sheet 22 is coated with the above mentioned solid acid forming the sensitive color developing agent 16 together with the colorless pigment.

The first base sheet 22 is put on the second base sheet 24 and both sheets 22 and 24 can be fixed to each other by means of a staple (not shown) or a thin layer of paste 26 so as to separate from each other easily.

If necessary, the first base sheet 22 can be of a single side carbon paper and the surface of the second base sheet 24 can be coated with the pressure sensitive developing agent 16.

Figure 3 shows a further embodiment of the articulating device according to the present invention. The articulating device 30 is formed from a first base sheet 32 and a second base sheet 34 and both sheets are cut out in a tongue-like configuration. For facilitating to handling the device 30, there are provided handle portions 36 and 38 which are respectively extended outwardly from the first and second base sheets 32 and 34.

One of the surfaces of the tongue shaped first base sheet 32 is coated with the dark waxy pigment 14 in U-shaped configuration so as to adapt to the arrangement of the teeth. The second base sheet 34 is coated with the above-mentioned pressure sensitive developing agent 16 in the same manner as in the foregoing embodiments of the present invention.

The first base sheet 32 and the second base sheet 34 are pasted up by a thin paste layer 26 each other so as to separate easily. The handle portion 36 of the first base sheet 32 is

provided with a cutting or slit line 40 at a desired position so as to separate the first base sheet 32 from the second base sheet 34.

As shown in Figures 4 and 5, the first base sheet 32 can be put on the second base sheet 34, pasted together and then folded over to form the articulating device according to the present invention,

In order to inspect the condition of the occlusion of the upper and lower teeth by using the articulating device according to the present invention, the device can be bit by the upper and lower teeth of a patient. Thus, the dark waxy pigment 14 on the first base sheet is transferred onto the surface of each of the teeth and the pressure sensitive developing agent coated on the sheet can be changed in color at the position to which the high pressure is applied in biting.

The result of inspection of the occlusion in using the articulating device according to the present invention is illustrated in Figures 6 to 8, schematically. Figure 6 shows an arrangement of the teeth and Figure 7 shows the surface of the articulating device coated with the waxy pigment 14 and Figure 8 shows the surface of the sheet 30 coated with the pressure sensitive developing agent 16.

As shown in Figure 6, the area of each of the impressed portions on the surface of the teeth is somewhat wide. Therefore, it is impossible to determine the malocclusion therefrom.

On the other hand, since the surface coated with the pressure sensitive developing agent 16 will not be changed in color

unless the microcapsules are destroyed by biting and the pigment enclosed in the capsule contacts with the solid acid, the malocclusion may be defined to the portion (R) to which abnormal pressure is applied in biting.

Consequently, in comparing the impressed portion (C) on the teeth with the developed portion (R) on the sheet in the device, the malocclusion can easily be detected as shown in Figure 8.

While the invention has been described in its preferred embodiments, it will be understood by those skilled in the art that the foregoing and other changes in form and details can be made therein without departing from the scope of the present invention.

What is claimed is:

1. An articulating device comprising a single base sheet on one surface of which is coated with dark waxy pigment and other surface is coated with pressure sensitive color developing agent.
2. The articulating device as claimed in claim 1 in which the base sheet is of paper.
3. The articulating device as claimed in claim 1 in which the base sheet is of an one side carbon paper.
4. The articulating device as claimed in claim 1 in which the base sheet is of a semitransparent film.
5. The articulating device as claimed in claim 1 in which the sheet is of a transparent film.
6. An articulating device comprising a first base sheet, one surface of the first base sheet being coated with dark waxy pigment, and a second base sheet to be laid on the first sheet and the surface to be faced to the first base sheet of the second base sheet being coated with a sensitive color developing agent.
7. The articulating device as claimed in claim 6 in which the first base sheet is of a carbon paper.
8. The articulating device as claimed in claim 6 in which at least one end of the first base sheet is connected with one end of the second base sheet.
9. The articulating device as claimed in claim 6 in which the first base sheet is put on the second base sheet.
10. The articulating device as claimed in claim 6 in which each of the first base sheet and the second base sheet is formed in tongue-like configuration.

11. The articulating device as claimed in claim 10 in which each of the first base sheet and the second base sheet is provided with a handle portion extending outwardly therefrom.

12. The articulating device as claimed in claim 11 in which the handle portion of the first base sheet is provided with a cutting line.

13. An articulating device substantially as herein before described with reference to and as illustrated in the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

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Relevant Technical fields

(i) UK CI (Edition K) A5R (RDMA, RDMB), B2E (EM)

(ii) Int CI (Edition 5) A61C

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASE: WPI

Search Examiner

L V THOMAS

Date of Search

12 FEBRUARY 1992

Documents considered relevant following a search in respect of claims

1 TO 13

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
Y	GB A 2190294 (TUNBRIDGE) See lines 13-30 page 1	1-3
Y	EP A 0001253 (LUSTIG) See lines 12-17 page 2, lines 7-9 page 4 and figure 5	1, 4, 5
Y	US 4676748 (PIETKIRITCH) See lines 63 column 4 - line 7 column 5 and lines 22-37 column 5	1-3
Y	US 3918160 (FRIEDMAN) See lines 41-48 column 2 and lines 1-28 column 3	1, 2
Y	US 3604116 (SHPUNTOFF) See lines 1-25 column 2	1, 4, 5

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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